

PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

REC'D 24 OCT 2005

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Applicant's or agent's file reference FP20461	FOR FURTHER ACTION		See Form PCT/IPEA/416
International application No. PCT/AU2004/001467	International filing date (day/month/year) 25 October 2004	Priority date (day/month/year) 24 October 2003	
International Patent Classification (IPC) or national classification and IPC Int. Cl. ⁷ F23D 5/12, F23L 1/00, 1/02, 7/00			
Applicant THE FIRE COMPANY PTY LTD et al			

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 3 sheets, including this cover sheet.

3. This report is also accompanied by ANNEXES, comprising:

a. ☒ (sent to the applicant and to the International Bureau) a total of 5 sheets, as follows:

☒ sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).

☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.

b. ☐ (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or table related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:

☒ Box No. I Basis of the report

☐ Box No. II Priority

☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

☐ Box No. IV Lack of unity of invention

☒ Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

☐ Box No. VI Certain documents cited

☐ Box No. VII Certain defects in the international application

☐ Box No. VIII Certain observations on the international application

Date of submission of the demand 11 March 2005	Date of completion of the report 12 October 2005
Name and mailing address of the IPEA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaaustralia.gov.au Facsimile No. (02) 6285 3929	Authorized Officer GREGORY DIVEN Telephone No. (02) 6283 2992

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/AU2004/001467

Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
 - ☐ This report is based on translations from the original language into the following language which is the language of a translation furnished for the purposes of:
 - ☐ international search (under Rules 12.3 and 23.1 (b))
 - ☐ publication of the international application (under Rule 12.4)
 - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the elements of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:
 - ☐ the international application as originally filed/furnished
 - ☒ the description:
 - pages 1-11 as originally filed/furnished
 - pages* received by this Authority on with the letter of
 - pages* received by this Authority on with the letter of
 - ☒ the claims:
 - pages as originally filed/furnished
 - pages* as amended (together with any statement) under Article 19
 - pages* 12-16 received by this Authority on 19 May 2005 with the letter of 19 May 2005
 - pages* received by this Authority on with the letter of
 - ☒ the drawings:
 - pages 1/2-2/2 as originally filed/furnished
 - pages* received by this Authority on with the letter of
 - pages* received by this Authority on with the letter of
 - ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing.
3. ☐ The amendments have resulted in the cancellation of:
 - ☐ the description, pages
 - ☐ the claims, Nos.
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing (*specify*):
 - ☐ any table(s) related to the sequence listing (*specify*):
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
 - ☐ the description, pages
 - ☐ the claims, Nos.
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing (*specify*):
 - ☐ any table(s) related to the sequence listing (*specify*):

* If item 4 applies, some or all of those sheets may be marked "superseded."

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/AU2004/001467

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims 1-30	YES
	Claims	NO
Inventive step (IS)	Claims 1-30	YES
	Claims	NO
Industrial applicability (IA)	Claims 1-30	YES
	Claims	NO

2. Citations and explanations (Rule 70.7)

Novelty (N)

None of the cited documents disclose all of the features of each of the independent claims. Therefore all of the claims are novel.

Inventive Step (IS)

The claimed invention is not obvious in the light of any of the cited documents nor is it disclosed in any obvious combination of them. It is also considered that it would not be obvious to a person skilled in the art in the light of common general knowledge either by itself or in combination with any of these documents.

Industrial Applicability (IA)

The claims are related to products capable of commercial application.

- 12 -

The Claims:

1. A burner for a heater for combustion of a hydrocarbon liquid, the burner comprising:
 - 5 a combustion chamber having a combustion zone for combusting the hydrocarbon liquid and at least one tank portion for containing an amount of the hydrocarbon liquid, the or each tank portion being positioned adjacent the combustion zone and being arranged to feed the
 - 10 hydrocarbon liquid into the combustion zone, the or each tank portion being at least in part filled with a filling material having a plurality of portions that pass through the interior of the or each tank portion,
wherein the filling material is arranged for
 - 15 distribution of at least some of the heat that is in use developed in the combustion zone and directed into the or each tank portion whereby local heat maxima in the tank portion are reduced and thereby likelihood of ignition in the tank portion is reduced.
 - 20
2. The burner as claimed in claim 1 wherein the filling material comprises more than one hundred particles which define spaces between them.
- 25 3. The burner as claimed in claim 1 wherein the filling material comprises a mesh.
4. The burner as claimed in claim 1 wherein the filling material comprises a mesh gauze.
- 30 5. The burner as claimed in claim 1 wherein the filling material comprises steel wool.

- 13 -

6. The burner as claimed in any one of the preceding claims wherein the filling material comprises a metallic material.

5 7. The burner as claimed in any one of the preceding claims being a part of a fireplace.

8. The burner as claimed in any one of the preceding claims comprising a combustion control means for
10 controlling gas exchange of the combustion in the first combustion zone.

9. The burner as claimed in claim 8 wherein the control means comprises an opening that allows diffusion of oxygen
15 into the combustion chamber and a closure for the opening.

10. The burner as claimed in claim 9 wherein the combustion control means may comprises a shutter that is arranged to adjust the opening so as to control the
20 combustion the combustion zone.

11. The burner as claimed in claim 9 or 10 wherein the shutter is arranged to close the opening so as to extinguish a flame in combustion zone.
25

12. The burner as claimed in claim 11 wherein the shutter is arranged so that, when the opening is closed, the lid portion overlaps the shutter.

30 13. The burner as claimed in any one of the preceding claims comprising spacers positioned adjacent an external portion of the burner and arranged to avoid direct contact between the burner and an item that supports the burner.

- 14 -

14. The burner as claimed in any one of the preceding
claims comprising a tray in which the burner is positioned
and which is arranged to avoid direct contact between the
5 burner and item that supports the burner.

15. The burner as claimed in claim 13 or 14 wherein the
item is combustible.

10 16. The burner as claimed in any one of the preceding
claims arranged for positioning in an item so that at
least a portion of the burner is positioned below a
surface of the item.

15 17. The burner as claimed in any one of the preceding
claims arranged for positioning in a fireplace.

18. The burner as claimed in any one of the preceding
claims arranged for positioning in a furniture item.

20

19. The burner as claimed in any one of the preceding
claims wherein the combustion chamber comprises a fuel
inlet opening through which the hydrocarbon liquid may be
filled into the or each tank portion of the combustion
25 chamber.

20. The burner as claimed in claim 19 wherein the fuel
inlet opening is remote from the opening of the combustion
control means.

30

21. The burner as claimed in claim 19 or 20 wherein the
fuel inlet opening comprises a closure.

- 15 -

22. The burner as claimed in claim 9 or in anyone of
claims 10 to 21 when dependent on claim 9 being arranged
so that, when the shutter of the combustion control means
is fully open, the shutter of the fuel inlet opening is
5 closed and only when at least a portion of the shutter of
the combustion control means is closed the fuel inlet
opening is fully open.
23. The burner as claimed in claim 22 wherein the shutter
10 of the combustion control means and the shutter of the
fuel inlet means are provided in form of an integral part.
24. The burner as claimed in any one of the preceding
claims comprising two tank portions between which the
15 combustion zone is positioned.
25. The burner as claimed in claim 23 wherein the tank
portions are separated from the combustion zone by wall
portions that comprise apertures to allow the fuel to
20 penetrate from the tank portions into the combustion zone.
26. The burner as claimed in any one of the preceding
claims having at least two tank portions and wherein the
combustion zone is positioned between the at least two
25 tank portions.
27. A heater comprising the burner as claimed in any one
of claims 1 to 26.
- 30 28. A burner for a heater for combustion of a hydrocarbon
liquid, the burner comprising:
a combustion chamber having a combustion zone for
combusting the hydrocarbon liquid and at least one tank

- 16 -

portion for containing an amount of the hydrocarbon liquid, the or each tank portion being positioned adjacent the combustion zone and being arranged to feed the hydrocarbon liquid into the combustion zone,

5 and a fuel inlet portion having a closure, and
 a combustion control means for controlling gas exchange of the combustion zone through an gas exchange opening of the combustion chamber

 wherein the closure of the fuel inlet opening is
10 arranged so that filling of the fuel into the or each tank portion is only possible if the combustion control means closes at least a portion of the gas exchange opening of the combustion chamber.

15 29. The burner as claimed in claim 28 wherein the combustion control means typically comprises a shutter for controlling the gas exchange through the gas exchange opening of the combustion chamber and wherein the closure of the fuel inlet opening also includes a shutter.

20 30. The burner as claimed in claim 29 wherein the shutter for controlling gas and the shutter of the fuel inlet opening are coupled.